INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/23981

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : C12N 9/12, 1/20, 15/00; C07K 1/00, C07H 21/02, 21/04
US CL : 435/194, 320.1, 252.3; 536/23.2, 23.1; 530/350
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 435/194, 320.1, 252.3; 536/23.2, 23.1; 530/350

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
MEDLINE, EMBASE, BIOSIS, BIOTECHDS, SCISEARCH, HCAPL_US, NTIS, LIFESCI, BRS/EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KARMER et al. A novel isoform of the smooth muscle cell differentiation marker smoothelin. J. Mol. Med. February 1999, Vol.77, pages 294-298, see the entire article specially figures 1-2.	1-11, 20, 51-56, 58, 60
Y	ROUSE et al., A Novel Kinase Cascade Triggered by Stress and Heat Shock That Stimulates MAPKAP Kinase-2 and Phosphorylation of the Small Heat Shock Proteins. Cell. September 1994, Vol.78, pages 1027-1037, see specially figure4 and pages 1034-1035.	10-11, 20, 51-56, 58, 60
Y	HUANG et al. LSP1 Is the Major Substrate for Mitogen-activated Protein Kinase-activated Protein Kinase 2 in Human Neutrophils. J.B.C. January 1997, Vol.272, No.1, pages 17-19, see abstarct.	10-11, 20, 51-56, 58, 60

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
15 July 2005 (15.07.2005)

Date of mailing of the international search report
22 AUG 2005

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (703) 305-3230

Authorized officer
Maryam Monshipouri
MARYAM MONSHIPOURI, PH.D.
PRIMARY EXAMINER

Telephone No. 703 308-0196

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/23981

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-11,20 and 51-60

Remark on Protest
☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

PCT/US03/23981

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group 1, claim(s) 1-11, 20, 51-60, drawn to an isolated MK2/STS complex, host cells comprising DNA encoding said complex and methods of expressing said complex.

Group 2, claim(s) 1-11, 20, 51-60, drawn to an isolated MK2/Shc complex, host cells comprising DNA encoding said complex and methods of expressing said complex.

Group 3, claim(s) 1-11, 20, 51-60, drawn to an isolated MK2/HPH2 complex, host cells comprising DNA encoding said complex and methods of expressing said complex.

Group 4, claims 12-14, and 19, drawn to assay to identify modulators of MK2/interacting protein formation and a method of modulating protein complex formation.

Group 5, claims 15-16, an assay to identify compounds that affects MK2 kinase activity

Group 6, claims 17-18, 21-25, 28-29, 31, 34-38, 41 drawn to antibodies which bind MK2/STS complex and methods of identifying anti-inflammatory drugs utilizing MK2/STS complex and methods of treating inflammation utilizing said antibody.

Group 7, claims 17-18, 21-25, 28-29, 31, 34-38, 41, drawn to antibodies which bind MK2/Shc complex and methods of identifying anti-inflammatory drugs utilizing MK2/Shc complex and methods of treating inflammation utilizing said antibody.

Group 8, claims 17-18, 21-25, 28-29, 31, 34-38, 41, drawn to antibodies which bind MK2/HPH2 complex and methods of identifying anti-inflammatory drugs utilizing MK2/HPH2 complex, methods of treating inflammation utilizing said antibody.

Group 9, claims 21-24, 26, 28-31, methods of identifying anti-inflammatory drugs utilizing MK2/STS complex wherein the drug is protein.

Group 10, claims 21-24, 26, 28-31, methods of identifying anti-inflammatory drugs utilizing MK2/Shc complex wherein the drug is protein.

Group 11, claims 21-24, 26, 28-31, methods of identifying anti-inflammatory drugs utilizing MK2/HPH2 complex wherein the drug is protein.

Group 12, claims 21-24, 27-31,34, 39, drawn to methods of identifying anti-inflammatory drugs utilizing MK2/STS complex wherein the drug is a chemical agent, methods of treatment and methods of modulating inflammation utilizing said chemical agent.

Group 13, claims 21-24, 27-31, 34, 39, methods of identifying anti-inflammatory drugs utilizing MK2/Shc complex wherein the drug is a chemical agent, methods of treatment and methods of modulating inflammation utilizing said chemical agent.

Group 14, claims 21-24, 27-31, 34, 39, drawn to methods of identifying anti-inflammatory drugs utilizing MK2/HPH2 complex wherein the drug is a chemical agent, methods of treatment and methods of modulating inflammation utilizing said chemical agent.

Group 15, claims 32-34,40, 42, 47-48, drawn to a method of modulating inflammation utilizing DNA encoding MK2/STS protein complex, methods of treatment and methods of modulating inflammation utilizing a peptide or a protein.

Group 16, claims 32-34 40, 42, 47-48, drawn to a method of modulating inflammation utilizing DNA encoding MK2/Shc protein complex, methods of treatment and methods of modulating inflammation utilizing a peptide or a protein

Group 17, claims 32-34, 40, 42, 47-48, drawn to a method of modulating inflammation utilizing DNA encoding MK2/HPH2 protein complex methods of treatment and methods of modulating inflammation utilizing a peptide or a protein.

INTERNATIONAL SEARCH REPORT

PCT/US03/23981

Group 18, claims 43-46, drawn to a method of treatment using modulators of MK2/STS protein complex.

Group 19 claims 43-46, drawn to a method of treatment using modulators of MK2/Shc protein complex.

Group 20, claims 43-46, drawn to a method of treatment using modulators of MK2/HPH2 protein complex.

Group 21, claims 49-50, drawn to a method of detecting MK2 or MK2/STS complex in a sample utilizing antibody.

Group 22, claims 49-50, drawn to a method of detecting MK2 or MK2/Shc complex in a sample utilizing antibody.

Group 23, claims 49-50, drawn to a method of detecting MK2 or MK2/HPH2 complex in a sample utilizing g antibody.

Group 24, claims 49-50, drawn to a method of detecting MK2 or MK2/STS complex in a sample utilizing proteins or peptides.

Group 25, claims 49-50, drawn to a method of detecting MK2 or MK2/Shc complex in a sample utilizing proteins or peptides.

Group 26, claims 49-50, drawn to a method of detecting MK2 or MK2/HPH2 complex in a sample utilizing proteins or peptides.

Group 27, claims 49-50, drawn to a method of detecting MK2 or MK2/STS complex in a sample utilizing a chemical agent.

Group 28, claims 49-50, drawn to a method of detecting MK2 or MK2/Shc complex in a sample utilizing a chemical agent.

Group 29, claims 49-50, drawn to a method of detecting MK2 or MK2/HPH2 complex in a sample utilizing a chemical agent.

The inventions listed as Groups 1-32 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:
The special technical features of Groups 1-3, 4, 6-8, are MK2/STS protein complex (or DNA encoding it) , MK2/Shc protein complex (or DNA encoding it), MK2/HPH2 protein complex (or DNA encoding it), modulators, MK2/STS antibody, MK2/Shc antibody and MK2/HPH2 antibody, which are each products of unrelated chemical structure and function.
Groups 1, 9, 12, 15, 18, 21, 24 and 27 share a special technical feature (namely MK2/STS complex) but said inventions are not required to be rejoined under PCT rule 13.1 because Group 1 already has a method of use of said product.
Groups 2, 10, 13, 16, 19, 22, 25 and 28 share a special technical feature (namely MK2/Shc complex) but said inventions are not required to be rejoined under PCT rule 13.1 because Group 1 already has a method of use of said product.
Groups 3, 11, 14, 17, 20, 23, 26 and 29, share a special technical feature (namely MK2/HPH2 complex) but said inventions are not required to be rejoined under PCT rule 13.1 because Group 1 already has a method of use of said product.
Groups 4-5 share a special technical feature (namely modulators) but said inventions are not required to be rejoined under PCT rule 13.1 because Group 1 already has a method of use of modulators.